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मानक

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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

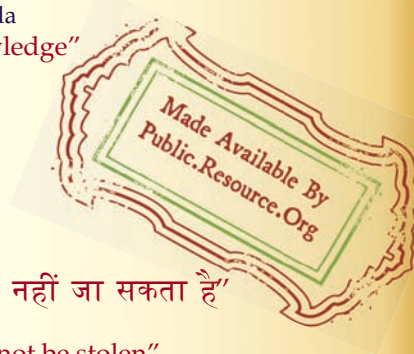
IS 15666-5 (2006): Gas Turbines - Procurements, Part 5:
Applications for petroleum and natural gas industries [ETD
15: Rotating Machinery]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

गैस टरबाइन — खरीद

भाग 5 पेट्रोलियम एवं प्राकृतिक गैस उद्योग के लिए अनुप्रयोग

Indian Standard

GAS TURBINES — PROCUREMENT

PART 5 APPLICATIONS FOR PETROLEUM AND NATURAL GAS INDUSTRIES

ICS 27.040; 75.180.10; 75.180.20

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NATIONAL FOREWORD

This Indian Standard (Part 5) which is identical with ISO 3977-5 : 2001 'Gas turbines — Procurement — Part 5 : Applications for petroleum and natural gas industries' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Rotating Machinery Sectional Committee and approval of the Electrotechnical Division Council.

The text of the ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their respective places are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 3977-1 : 1996 Gas turbines — Procurement — Part 1 : General introduction and definitions	IS 15666 (Part 1) : 2006 Gas turbines — Procurement: Part 1 General introduction and definitions	Identical
ISO 3977-2 : 1997 Gas turbines — Procurement — Part 2 : Standard reference conditions and ratings	IS 15666 (Part 2) : 2006 Gas turbines — Procurement: Part 2 Standard reference conditions and ratings	do
ISO 3977-3 : 2004 Gas turbines — Procurement — Part 3 : Design requirements	IS 15666 (Part 3) : 2006 Gas turbines — Procurement: Part 3 Design requirements	do
ISO 3977-4 : 2002 Gas turbines — Procurement — Part 4 : Fuels and environment	IS 15666 (Part 4) : 2006 Gas turbines — Procurement: Part 4 Fuels and environment	do
ISO 3977-7 : 2002 Gas turbines — Procurement — Part 7 : Technical information	IS 15666 (Part 7) : 2006 Gas turbines — Procurement: Part 7 Technical information	do
ISO 3977-8 : 2002 Gas turbines — Procurement — Part 8 : Inspection, testing, installation and commissioning	IS 15666 (Part 8) : 2006 Gas turbines — Procurement: Part 8 Inspection, testing, installation and commissioning	do
ISO 3977-9 : 1999 Gas turbines — Procurement — Part 9 : Reliability, availability, maintainability and safety	IS 15666 (Part 9) : 2006 Gas turbines — Procurement: Part 9 Reliability, availability, maintainability and safety	do
ISO 11086 : 1996 Gas turbines — Vocabulary	IS 15665 : 2006 Gas turbines — Vocabulary	do

(Continued on third cover)

Indian Standard

GAS TURBINES — PROCUREMENT

PART 5 APPLICATIONS FOR PETROLEUM AND NATURAL GAS INDUSTRIES

1 Scope

This part of ISO 3977 specifies requirements and gives recommendations for the design, materials, fabrication, inspection, testing and preparation for shipment of packaged gas turbines for use in drilling, production, refining and the transport by pipelines of petroleum and natural gas. It is applicable to the procurement of gas turbines and gas turbine systems, including gas turbines for combined cycle systems, and their auxiliaries by a purchaser from a packager.

This part of ISO 3977 is not intended to deal with local or national legislative requirements to which the installation may be required to conform.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 3977. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 3977 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3977-1, *Gas turbines — Procurement — Part 1: General introduction and definitions*

ISO 3977-2, *Gas turbines — Procurement — Part 2: Standard reference conditions and ratings*

ISO 3977-3, *Gas turbines — Procurement — Part 3: Design requirements*

ISO 3977-4, *Gas turbines — Procurement — Part 4: Fuels and environment*

ISO 3977-7, *Gas turbines — Procurement — Part 7: Technical information*

ISO 3977-8, *Gas turbines — Procurement — Part 8: Inspection, testing, installation and commissioning*

ISO 3977-9, *Gas turbines — Procurement — Part 9: Reliability, availability, maintainability and safety*

ISO 11086, *Gas turbines — Vocabulary*

3 Terms and definitions

For the purposes of this part of ISO 3977, the terms and definitions given in ISO 11086, ISO 3977-1, ISO 3977-3, ISO 3977-4, ISO 3977-8 and ISO 3977-9 apply.

4 Requirements for gas turbines for the petroleum and natural gas industries

4.1 Reference conditions and ratings

Standard reference conditions for gas turbines shall be as defined in ISO 3977-2.

The packager shall declare standard ratings associated with the operational modes defined in ISO 3977-2. The packager shall also declare the site power rating as specified in ISO 3977-2, for the specified site conditions of the installation and operating modes under which the plant is intended to run in service.

4.2 Design requirements

4.2.1 Basic requirements

The minimum basic requirements for the procurement of gas turbines and gas turbine systems are specified in ISO 3977-3. ISO 3977-3 also provides assistance and technical information to be used in the procurement.

The purchaser shall provide site condition data and shall specify the package site specific operating point(s) on data sheets in accordance with ISO 3977-3.

The packager shall review and comment the purchaser's piping, ducting and foundation drawings as specified in ISO 3977-3.

Operational requirements shall be in accordance with ISO 3977-3.

Service requirements shall be in accordance with ISO 3977-3.

Rotating equipment requirements shall be in accordance with ISO 3977-3.

Other equipment requirements shall be in accordance with ISO 3977-3.

Vibrations and dynamics shall be in accordance with ISO 3977-3.

4.2.2 Packaging and auxiliary equipment

Packaging and auxiliary equipment shall be in accordance with ISO 3977-3.

The packager shall provide, as a minimum, the equipment in ISO 3977-3 listed as the minimum to be provided as the package. Any other equipment required shall be as specified by the purchaser and shall be included in the packager's scope of supply. This equipment shall be assembled (packaged) to the maximum extent practical.

Auxiliary equipment may include

- a) starting systems,
- b) mounting systems,
- c) enclosure and fire protection,
- d) air inlet systems,
- e) piping,
- f) oil systems,
- g) fuel system,
- h) electrical systems,
- i) exhaust system,

- j) driven equipment (compressor, pump, generator), and
- k) seal system for the above.

4.2.3 Control and instrumentation

Control and protection systems, and associated instrumentation, shall be in accordance with ISO 3977-3. Consideration shall be given to starting, loading and shutdown.

Provisions for ventilation and purging shall be in accordance with ISO 3977-3.

Fuel control, governing and limiting, and emission control shall be in accordance with ISO 3977-3.

Overspeed protection and protection systems shall be in accordance with ISO 3977-3.

Compressor wash systems shall be in accordance with ISO 3977-3.

Considerations for the control system shall be in accordance with ISO 3977-3.

Control panel installation shall be in accordance with ISO 3977-3.

Operability and diagnostics shall be in accordance with ISO 3977-3.

Data communications shall be in accordance with ISO 3977-3.

4.3 Fuels and environment

The responsibilities of the purchaser and of the packager with respect to the fuels and the relationship to the procurement of a gas turbine system shall be in accordance with ISO 3977-4.

4.4 Technical information

The information to be submitted during the proposal and contract stages of a project covering the packager's scope of supply is defined in ISO 3977-7.

The purchaser shall complete the data sheets and Packager Documentation Requirements from ISO 3977-7. The purchaser shall specify the performance data needed for the specific application in accordance with ISO 3977-7.

The packager shall provide the Proposal and the Contract Documentation in accordance with ISO 3977-7.

4.5 Inspection, testing, installation and commissioning

Inspection, testing, installation and commissioning shall be in accordance with ISO 3977-8. ISO 3977-8 states the principles for systems and procedures to assure the integrity of the packager's products and services, and also outlines the responsibilities between the purchaser and the packager.

Preparation for storage and shipment shall be in accordance with ISO 3977-8.

4.6 Reliability, availability, maintainability and safety

Exchange of information about reliability, availability, maintainability and safety between gas turbine manufacturers, packagers, purchasers, users, consultants, regulatory bodies and others shall be in accordance with ISO 3977-9.

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For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc : ET 15 (5694).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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